Translating Advanced Science into Personalized Health

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In order to prevent the impending financial and social burden caused by a steady increase in the incidence of chronic medical conditions, preventive self-care, where people are responsible and accountable for their own health, is the only option. No amount of medical care "reform" will be effective if the number of new people entering into the system with complex chronic diseases continues to rise at an alarming rate. These conditions, however, take many years to develop and there is a wealth of published literature concerning early predictive biomarkers of health. Such markers can detect dysfunction while there is still time to correct it, and hence prevent or delay disease onset. The era of personalized medicine (which includes genomics) has arrived but few know how to apply the science. In addition, there is good scientific support for the efficacy of modalities considered "alternative", but this literature is both fragmented and vast. In order to address these issues, the Optimal Health and Prevention Research Foundation (OHPRF), a 501c(3) public charity based in San Diego, has spent three years in R&D pulling all the science together into one Optimal Health Program. This program is designed for health optimization and disease prevention in a broad, generally healthy, US population. This personalized program starts with a phenotypic and genotypic assessment, which includes advanced biomarkers, mechanistic genomics, validated questionnaires, physiological testing, anthropometrics and non-invasive imaging. The breadth and depth of this assessment is unprecedented. More than 2500 individual biomarkers and 500 Single Nucleotide Polymorphisms (SNPs) were evaluated by the OHPRF research team, supported by the extended medical and scientific advisory board, leading experts, thought leaders and specialist panels. These represent the best evidence-based tests that are actionable, modifiable by self-care lifestyle interventions, are culturally compatible and commercially available. An artificial intelligence computer algorithm has been developed which will translate these results into a series of highly individualized self-care recommendations. These will be reviewed by an integrative physician whom the person sees at the start of the intervention. After this, the person will have access to 12 months of Optimal Health Coaching, which incorporates the science of behavior change. There will be retesting of some components to assess progress over time. For the purposes of evaluation, OHPRF will collaborate with the Scripps Center for Integrative Medicine, San Diego, in a demonstration project. The hypothesis is that correction of dysfunction by personalized lifestyle interventions, guided by deep phenotyping and genotyping, will have a measureable improvement in health. This pilot research will begin in Q1 2011 with 100 people, over the age of 18, who will be

included in the trial. These will be selected from volunteers to reflect, where possible, an equal representation of gender, age and ethnicity. Each individual will act as their own control which is the scientific reality of personalized medicine and is a well recognized research design. For the purposes of the study, there will be retesting of biomarkers after 12 weeks of the intervention. This will allow interim evaluation of the efficacy of the assessment process, algorithm, and coaching program. It will also guide modification before the implementation of the program through the first Optimal Health Center in San Diego in late 2011. By 2015, it is the intent of OHPRF to scale-up to many centers in various corporate, community, medical, and other settings across the US.